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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/724,310	11/26/2003	James E. Rogers	703697-2001	2977

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EXAMINER

DIAMOND, ALAN D

ART UNIT	PAPER NUMBER
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1753

DATE MAILED: 07/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/724,310	ROGERS ET AL.	
	Examiner	Art Unit	
	Alan Diamond	1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-93 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-93 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11262003</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: On page 7, at line 15, the term "FIGS. 1B-D ..." should start a new paragraph so as to clarify the brief description of these drawings. On page 7, at line 18, the term "FIG. 1E ..." should start a new paragraph so as to clarify the brief description of this drawing. On page 19, at line 16, the term "units 10" should be changed to "units 10a". On page 25, at line 18, the term "optical emitters 8" should be changed to "optical emitters 9". Appropriate correction is required.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "19" has been used to designate both a phased array antenna (page 15, line 19) and a phased-array reflector (page 30, line 10). Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Double Patenting

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3. Applicant is advised that should claim 66 be found allowable, claim 68 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k). Claim 66 recites "adjusts a shape of an element in space" and claim 68 recites "adjusts a shape of an element". However, the element of claim 68 is "in space" as in claim 66 because line 2 of parent claim 53 recites that the plurality of power system elements are "in space". Thus, there is no difference between claims 66 and 68.

Claim Objections

4. Claim 39 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Parent claim 34 already recites that the displacement element is selectively activated "to adjust an alignment of an element in space." Claim 39 recites that the displacement element "alters an alignment of an element in space." The altering of claim 39 does not further limit the adjusting of claim 34.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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6. Claims 15, 23, 24, 59, 61-63, and 82 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 15 at line 5, in claim 23 at line 1, and in claim 24 at line 2, the term "reflecting" should be changed to "reflective" so as to be consistent with the "reflective" mirror in claim 14.

Claim 59 is indefinite because "the photovoltaic module" at line 4 lacks positive antecedent support in claim 53.

Claim 61 is indefinite because the term "the first intermediate mirror" at lines 2-3 lacks positive antecedent support in claim 53. It is suggested that said term be changed to "the intermediate mirror".

Claim 61 is indefinite because "the photovoltaic module" at line 5 lacks positive antecedent support in claim 53.

Claim 62 is indefinite because the term "the generated reflecting mirror" at lines 1-2 lacks positive antecedent support in claim 53. It is suggested that said term be changed to "the reflective mirror".

Claim 63 is indefinite because the term "the optical power" at line 1 lacks positive antecedent support in claim 53. It is suggested that said term be changed to "the RF or optical energy".

In claim 63 at line 2, the term "reflecting" should be changed to "reflective" so as to be consistent with the "reflective" mirror in claim 53.

Claim 82 is indefinite because it is not clear how the direct radiating array or phased array antenna is related to the reflective mirror in parent claim 53. Note in claim 53 that it is the reflective mirror that directs the RF or optical energy to a receiver at a predetermined location.

Claim 82 is also indefinite because "the electrical energy" and the transmitting of the electrical energy to the predetermined location lack positive antecedent support in claim 53.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 2, 11-13, 25-35, 37-39, 49, 51, 52, 85-89, 92 and 93 are rejected under 35 U.S.C. 102(b) as being anticipated by Henderson et al, U.S. Patent 4,368,415.

Henderson et al teaches a spaced based power system comprising a free-floating satellite that collects sunlight and uses the sunlight to form a laser beam; and a free-floating intermediate platform (1) that converts the laser beam to electrical power which is passed to microwave generator (17), and the generated microwave is then passed to a transmitting dish on the platform which transmits the microwaves to the Earth (see the Figure and col. 2, line 64 through col. 4, line 27). The electrical energy is generated from the collected sunlight, as here claimed, since the collected sunlight is used to form the laser beam, and the laser beam is then converted to electrical power at

the intermediate platform. There is a control system comprising a telecommand transmitter on the platform, a command receiver (14) on the satellite, and a telecommand link (20) on the ground that controls and maintains alignment of the satellite and platform (see col. 4, lines 10-27; and the Figure). The satellite has a deformable mirror (12), as per claims 2 and 3. The laser energy is converted to electrical energy using a thermoelectric converter (see col. 4, line 2). The satellite has a retro-rocket guide system (13), and the platform has thrusters for maintaining its position (see col. 3, lines 44-45; and col. 4, lines 17-22). Since Henderson et al teaches the limitations of the instant claims, the reference is deemed to be anticipatory.

9. Claims 1, 2, 11, 12, 25-34, 37-44, 49-52, 85-88, and 91-93 are rejected under 35 U.S.C. 102(b) as being anticipated by Mikami et al, U.S. Patent Application Publication 2001/0035207.

Mikami et al teaches a space-based power system comprising plural free-floating power satellites (1) which read on the instant plural power system elements, wherein each power satellite collects sunlight, generates electrical energy from the collected sunlight using a photovoltaic conversion unit, and converts the electrical energy into microwaves for transmission to an electric power base antenna (3) of an electric power base (4) on the Earth (see paragraphs 0021-0023, 0028, and 0029; and Figure 1). Each power satellite has a condensing unit (6) that can be a reflector, i.e., mirror that can have a diameter of up to several tens of meters (see paragraph 0029). There is a free floating control satellite (2) that maintains alignment of the free floating satellites (1) (see Figure 1; and paragraph 0030). Additionally, the electric power base (4) on the

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Earth helps the control system by transmitting a beacon signal to the control satellite (2) (see paragraph 0030). The control system includes sensors for measuring the location of the satellites (see paragraph 0030). Since Mikami et al teaches the limitations of the instant claims, the reference is deemed to be anticipatory.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1-13, 25-52, and 85-93 are rejected under 35 U.S.C. 103(a) as being unpatentable over Henderson et al, U.S. Patent 4,368,415.

Henderson et al teaches a spaced based power system comprising a free-floating satellite that collects sunlight and uses the sunlight to form a laser beam; and a free-floating intermediate platform (1) that converts the laser beam to electrical power which is passed to microwave generator (17), and the generated microwave is then passed to a transmitting dish on the platform which transmits the microwaves to the Earth (see the Figure and col. 2, line 64 through col. 4, line 27). The electrical energy is generated from the collected sunlight, as here claimed, since the collected sunlight is used to form the laser beam, and the laser beam is then converted to electrical power at the intermediate platform. There is a control system comprising a telecommand transmitter on the platform, a command receiver (14) on the satellite, and a telecommand link (20) on the ground that controls and maintains alignment of the

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satellite and platform (see col. 4, lines 10-27; and the Figure). The satellite has a deformable mirror (12), as per claims 2 and 3. The laser energy is converted to electrical energy using a thermoelectric converter (see col. 4, line 2). The satellite has a deformable mirror (12), as per claims 2 and 3. The laser energy is converted to electrical energy using a thermoelectric converter (see col. 4, line 2). The satellite has a retro-rocket guide system (13), and the platform has thrusters for maintaining its position (see col. 3, lines 44-45; and col. 4, lines 17-22). Henderson et al teaches the limitations of the instant claims other than the difference which is discussed below.

Henderson et al does not specifically teach, for example, that its deformable mirror (12) is foldable, spherical, has a diameter of about 1 km to about 2 km, is supported by an inflatable tube, includes a substrate and the instant optical coating, or is supported by a membrane. Henderson et al also does not specifically teach that its thrusters are ion thrusters. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected an appropriate known mirror for Henderson et al's deformable mirror (12), and to have used ion thrusters for said thrusters, so that Henderson et al's space based power system could function properly.

12. Claims 1-34, 37-70, and 73-93 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mikami et al, U.S. Patent Application Publication 2001/0035207, in view of Keigler, U.S. Patent 4,371,135.

Mikami et al teaches a space-based power system comprising plural free-floating power satellites (1) which read on the instant plural power system elements, wherein

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each power satellite collects sunlight, generates electrical energy from the collected sunlight using a photovoltaic conversion unit, and converts the electrical energy into microwaves for transmission to an electric power base antenna (3) of an electric power base (4) on the Earth (see paragraphs 0021-0023, 0028, and 0029; and Figure 1).

Mikami et al is not limited to the electric power base (4) being on Earth. The use of an electric power base on a space station or another satellite would have been within the skill on an artisan so as to be able to supply power to the space station or satellite.

Each power satellite has a condensing unit (6) that can be a reflector, i.e., mirror that can have a diameter of up to several tens of meters (see paragraph 0029). There is a free floating control satellite (2) that maintains alignment of the free floating satellites (1) (see Figure 1; and paragraph 0030). Additionally, the electric power base (4) on the Earth helps the control system by transmitting a beacon signal to the control satellite (2) (see paragraph 0030). The control system includes sensors for measuring the location of the satellites (see paragraph 0030). Mikami et al teaches the limitations of the instant claims other than the differences which are discussed below.

Mikami et al, as noted above, teaches a sunlight condensing unit (6) that can be a mirror. However, Mikami et al does not specifically teach that said condensing unit (6) comprises a primary mirror and an intermediate mirror. The use of a primary mirror and an intermediate mirror is conventional in the art, as shown by Keigler. In particular, Keigler teaches mirrors (20) and (22) for reflecting the sunlight on the solar cells (18) (see Figure 1; and col. 2, lines 37-68). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a primary mirror and an

intermediate mirror for Mikami et al's condensing unit (6) because the use of a primary mirror and an intermediate mirror is conventional in the art, as shown by Keigler.

Mikami et al does not specifically teach, for example, that its mirror is foldable, spherical, is supported by an inflatable tube, includes a substrate and the instant optical coating, or is supported by a membrane. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected an appropriate known mirror for Mikami et al's condensing unit so that Mikami et al's space based power system could function properly.

13. Claims 35, 36, 71, and 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mikami et al in view of Keigler as applied to claims 1-34, 37-70, and 73-93 above, and further in view of Glaser, U.S. Patent 3,781,647.

Mikami et al in view of Keigler, as relied upon for the reasons recited above, teaches the limitations of instant claims 35, 36, 71 and 72, the difference being that Mikami et al does not specifically teach the use of thrusters, such as ion thrusters, for adjusting the position of the power satellites (1). However, as shown by Glaser, the use of thrusters, such as an ion thruster, to adjust the position of a satellite is conventional in the art (see col. 5, lines 31-45; and col. 9, line 3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used thrusters, such as ion thrusters, for adjusting the position of Mikami et al's power satellites (1) because the use of thrusters, such as an ion thruster, to adjust the position of a satellite is conventional in the art, as shown by Glaser.

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14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alan Diamond whose telephone number is 571-272-1338. The examiner can normally be reached on Monday through Friday, 5:30 a.m. to 2:00 p.m. ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Alan Diamond
Primary Examiner
Art Unit 1753

Alan Diamond
June 25, 2004

A handwritten signature in black ink, appearing to read 'Alan Diamond', with a stylized flourish at the end.